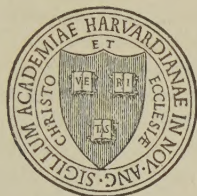


ARNOLD ARBORETUM  
HARVARD UNIVERSITYBULLETIN  
OF  
POPULAR INFORMATION

JAMAICA PLAIN, MASS.

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**Conifers**, especially Junipers of abnormal form, and dwarf and other small growing plants, have not before been planted in such numbers in the eastern states, where they are usually crowded together in beds without much regard to harmony of arrangement. Such beds of Conifers are found on each side of the entrance to many suburban and other estates, and against the base of houses small and large. The plants in these little plantations are attacked by numerous disfiguring insects and must often be changed, and, as is always the case in mixed plantations, some of the plants grow more rapidly than others and eventually destroy their weaker neighbors.

The statement that the climate of eastern North America is not adapted to the successful growth of Conifers is shown by the collection of these plants in the Arboretum which is believed to be the richest in the United States. There are now recognized twenty-eight genera of Conifers. Representatives of only fourteen or one-half are in the Arboretum collection and several of these are kept alive with difficulty. These genera are all of the Northern Hemisphere. No tree of the six genera which are found south of the equator is hardy at the north in our eastern states. The Japanese *Thuja japonica* has never grown in the Arboretum, in which four genera of southern China, *Glyptostrobus*, *Keteleeria*, *Taiwania* and *Fokienia* will always be unrepresented. More serious is our inability to grow here successfully some of the most important Conifers of western America, for the Sequoias, and no species of *Cupressus* are hardy here; the western *Tsugas* and *Chamaecyparis* are kept alive here with difficulty; the beautiful *Abies venusta* cannot survive a single New England winter, and the noblest Fir-trees in the

world, *Abies nobilis* and *A. magnifica*, occasionally exist here for a year or two but will never become a conspicuous feature in our northern plantations. There are from one hundred and sixty to one hundred and seventy species in the genera of Conifers which can be grown here, and in addition to the species a large number of varieties and forms, especially in *Juniperus*, *Chamaecyparis* and *Picea*. Of the genera which are more or less hardy here one hundred species can be kept alive in the Arboretum often for many years, but many of them present a sorry appearance after a severe winter and are of more interest to students of trees than to lovers of beautiful plants.

This short review of the Conifers shows that a comparatively small number of these plants can be depended on to become permanent ornaments to northern gardens and that the best of them here, with the exception of native species, are inferior in size and beauty to these plants in regions suited to their best growth, like the west coast of Scotland, the Italian lakes, and northwestern North America.

In northeastern North America many shrubs with deciduous leaves grow better and produce more abundant crops of flowers and fruit than anywhere in the world, and such plants can well and economically replace the dwarf and other Conifers which of late have been so largely used in the northern and middle states. If Evergreens are essential there are several dwarf hardy *Rhododendrons* which form a more compact setting for a building than the mixed plantation of little Conifers, and among other broad-leaved Evergreens suitable for the purpose there is the Laurel (*Kalmia latifolia*), the handsomest broad-leaved Evergreen plant which can be grown in the eastern states, the Inkberry of our coast region, and the *Andromeda floribunda* of the southern Appalachian Mountain forests.

The exceptionally mild winter of 1920-21 and the unusually heavy rainfall of the past summer have improved the appearance of the Arboretum Conifers which are now looking unusually well, but as at least from seventy-five to one hundred years are needed to properly test the value of any tree of large size transferred to a region where it does not grow naturally we can only feel sure that such native Conifers as the White Pine (*Pinus Strobus*), the northern Hemlock (*Tsuga canadensis*), the so-called Red Cedar (*Juniperus virginiana*), the Arborvitae (*Thuja occidentalis*), and the White Cedar (*Chamaecyparis thyoides*), are really the trees for permanent New England plantations.

Of the White Pine and the Hemlock nothing need be said here; their place is among the noble Conifers of the world and they are familiar to all the tree lovers of northeastern America. As a timber-tree only the long-leaved Pine of the south (*Pinus palustris*) is more valuable than the White Pine. The Red Cedar is a widely distributed tree ranging from Nova Scotia to eastern Texas. In this great region it varies in size and habit, and at the north is rarely more than thirty or forty feet high and usually of narrow pyramidal habit, while in the south its head is more often broad and round-topped; it grows, too, to a large size in the south sometimes, and specimens once existed in the valley of the Red River one hundred feet high. Largely used now, especially in the middle states, for the decoration of gardens this Juniper is more valuable as a timber than as an ornamental tree for in gardens it too often suffers badly from the red spider and other disfiguring insects. But as a timber tree the Red Cedar among American trees is in a class by itself.



The bright red, fragrant wood in contact with the soil resists decay for many years; its fragrance makes it the best American wood for chests and the lining of closets used for the summer storage of woollens as the odor of the wood is repellant to moths. There are a number of forms of the Red Cedar in the Arboretum collection and several of them are now found in commercial nurseries. The handsomest of these are forms with silvery gray foliage, with gracefully pendulous branches, and some of the forms of dwarf habit, especially the plant now sold in nurseries as *Juniperus Kosteriana*. The Arborvitae produces durable fence posts but is not large enough to be profitably sawed into lumber. No tree, with the exception perhaps of the Japanese species of *Chamaecyparis* (*Retinospora*), produces so many distinct seedling forms. There are at least fifty of these in the Arboretum collection, varying from large or small, dense ball-shaped plants to tall narrow pyramids; there are forms with yellow leaves and with pendulous, and with slender, whiplike branches. As a garden plant the most valuable of them all is perhaps the tall slender pyramid raised many years ago by Robert Douglas of Waukegan, Illinois, and generally known as "Douglas's Pyramidal Arborvitae." This appears to be the best substitute in northern gardens for the pyramidal Italian Cypress. There are two good specimens of this pyramidal Arborvitae in the Arboretum collection. The eastern America *Chamaecyparis* is a handsome slender tree with gray-green foliage and durable wood often used for fence posts, but in beauty and importance as a timber tree is far below in value the western American and Japanese species. It is established in the Arboretum but has grown slowly here and has sometimes suffered during severe winters, although it is common in swamps within twenty miles of Boston and formerly grew naturally within three or four miles of the Arboretum. Although it has not been cultivated as long as the White Pine, the Hemlock and the Arborvitae, the Red or Norway Pine (*Pinus resinosa*) may be expected to become a permanent tree in north-eastern plantations. In youth it is a beautiful tree with long dark green leaves, and the handsomest of the hard wood Pines which can be grown in this climate. This Pine once grew naturally in the neighborhood of Boston, and its adaptability to the soil of the Arboretum is shown by the numerous seedlings which spring up here naturally and grow rapidly. The other New England Conifer, the Pitch Pine (*Pinus rigida*), becomes sometimes a picturesque tree, but probably will never be much planted except on the sands of Cape Cod where it grows better than most trees under such difficult conditions and produces quickly good crops of valuable fuel. There are four other eastern Pines in the Arboretum, the northern *Pinus Banksiana*, the short-leaved southern Yellow Pine (*Pinus echinata*), one of the valuable timber trees of the country, the Appalachian *Pinus pungens* and the Virginia Jack Pine (*Pinus virginiana*). The last and *Pinus Banksiana* will probably be permanent trees here but they have no particular value beyond the fact that they can grow rapidly in the poorest soil. *Pinus pungens*, too, grows on sterile hillsides from Pennsylvania to Georgia and is the least valuable of these American conifers. The short-leaved Yellow Pine has been growing in the Arboretum for more than thirty years. It has grown very slowly, and even the trees raised from seeds collected on Staten Island, New York, lose their leaves in severe winters.

Seventy-five years have not been required to show that some com-

monly cultivated Conifers have no real permanent value in northeastern North America. The Colorado Blue Spruce, for example, was first raised from seeds in the Harvard Botanic Garden during the winter of 1863, the year after its discovery by Dr. Parry. One of the original seedling plants now fifty-eight years old is growing here on the south slope of Bussey Hill in good soil and has had good care; it has lost most of its lower branches, others are half dead, and it is hard to imagine a more miserable looking object. For several years it has been allowed to live as a warning to planters of this tree which is perhaps the most popular Conifer in eastern America where it is planted every year by tens perhaps hundreds of thousands. Millions of dollars have been spent for this tree which has always sold at a high price, but it is not probable that in fifty years one per cent. of all the planted trees will be alive. The unusual blue color of the leaves and the juvenile habit of this Colorado tree attract planters who rarely look many years ahead or avail themselves of information to which they might have access if they cared for it.

Three European Conifers which have been largely planted in the northeastern states in the last sixty or seventy years have not proved permanently valuable here. These are the so-called Norway Spruce (*Picea Abies* or *excelsa*), the Scotch Pine (*Pinus sylvestris*) and the Austrian Pine (*Pinus nigra*). They are all hardy here and valuable timber trees in their native countries. The Norway Spruce is a handsome tree here in youth but at the end of forty or fifty years begins to die at the top and soon becomes unsightly. This tree is not planted as generally here now as it was but its introduction into this country must be considered a misfortune. The two Pines have not been so often planted although some American foresters are raising and planting the Scotch Pine in large numbers. The seedlings grow rapidly and are easily transplanted. From thirty to forty years, however, appear to be the length of life of this tree in most parts of the eastern states. It is possible, of course, that planted as forest trees it may last longer, but this fact should be known before large forest plantations are made of it, that is in eighty or one hundred years from this time. The Austrian Pine has been less commonly planted. It grows well while young, but too often dies without apparent cause at the end of thirty or forty years. As an ornamental tree it is in every way inferior to the native Red or Norway Pine.

Of the Conifers of other regions that have not yet been thoroughly tested here, that is which have been growing in New England for less than fifty or sixty years, those which give the greatest promise of permanent usefulness in this climate are the Hemlock of the Carolina Mountains which has been growing in the Arboretum for forty years and is now perhaps the most beautiful of all the Conifers in the collection, the Chinese Pseudolarix, the Japanese *Abies homolepis*, the White Fir of the southern Rocky Mountains (*Abies concolor*), the Colorado form of the Douglas Spruce discovered in 1862, two Japanese Spruces, *Picea bicolor* and *P. Glehnii*, the western White Pine (*Pinus monticola*), the Idaho form of the western Arborvitae (*Thuja plicata*), and the Balkan Spruce (*Picea omorika*). Time, however, only can tell, what the value of these trees may be when they have reached maturity.

These Bulletins will now be discontinued until next spring.



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